

# on affectedness

Semantics 3, UCLA Linguistics

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## 1 this week's goals

- dip our toe in the waters of lexical semantics
- look a bit at deadjectival verbs, then incremental theme verbs more generally
- some more evidence of the pervasiveness of quantization / homogeneity / monotonicity

## 2 background: degree achievements

- Hay et al. (1999); Kennedy and Levin (2008)
  - degree achievements: a type of achievement encoded in a verb derived from a gradable adjective
    - usually, different Aktionsart classes differ on various tests
- |     |    |  |               |
|-----|----|--|---------------|
| (1) | a. | Kim is singing. → Kim has sung.                  | <i>atelic</i> |
|     | b. | Kim is writing a song. → Kim has written a song. | <i>telic</i>  |
| (2) | a. | Pug snoozed for / ?in an hour.                   | <i>atelic</i> |
|     | b. | Pug destroyed the couch ?for / in an hour.       | <i>telic</i>  |
- but degree achievements:
- |     |    |   |
|-----|----|---|
| (3) | a. | Kim is lengthening the rope. → Kim has lengthened the rope.     |
|     | b. | Kim is straightening the rope. → Kim has straightened the rope. |
| (4) | a. | The soup cooled in an hour.                                     |
|     | b. | The soup cooled for an hour.                                    |
- the Hay et al. analysis
- |     |    |  |
|-----|----|--|
| (5) | a. | $\llbracket \text{Kim lengthened the rope} \rrbracket = \exists e, d [\text{INCREASE}(\text{long}(\text{rope}))(d)(e)]$                |
|     | b. | $\llbracket \text{Kim lengthened the rope 5 inches} \rrbracket = \exists e [\text{INCREASE}(\text{long}(\text{rope}))(5\text{in})(e)]$ |
- -en/∅ denote functions INCREASE (where SPO and EPO “are functions from events to times that return an event’s beginning and end points, respectively” (p131).
- |     |  |
|-----|--|
| (6) | $\llbracket \text{INCREASE}(\phi)(x)(d)(e) \rrbracket = 1$ iff $\phi(x)(\text{SPO}(e)) + d = \phi(x)(\text{EPO}(e))$ |
|-----|--|
- there’s no systematic ambiguity... just existential closure and the presence of a specified difference (either via an MP or an adverb like *completely*)... or a contextually supplied difference.
  - context affects telol in two ways: (1) it may or may not provide a verb with a telos, and (2) it fixes the telol for verbs that have them.
- |     |   |
|-----|---|
| (7) | The tailor is lengthening my pants. → The tailor has lengthened my pants. |
|-----|---|

(8) The traffic is lengthening my commute. → The traffic has lengthened my commute.

“Although there is a conventional maximal length for pants, there is no such bounded length for a commute” (p137). They label it a **conversational implicature**.

- Kennedy and Levin (2008): a more “compositional” analysis

- two problems with Hay et al.: the telos isn’t always the maximum; predicts all DAs are ambiguous
- the (strong) default telic interpretation of verbs like *darken*;

- (9)
- The sky darkened (??but it didn’t become dark).
  - The shirt dried (??but it didn’t become dry).
  - The sink emptied (??but it didn’t become empty).

- the lack of a telic meaning for verbs like *widen*; and

- (10)
- The gap between the boats widened for /??in a few minutes.
  - The recession deepened for /??in several years.

- the Kennedy & Levin analysis:

- gradable adjectives denote **measure functions**, type  $\langle e, d \rangle$ :  $\llbracket \text{cool} \rrbracket = \lambda x. \text{cool}(x)$  (or  $= \lambda d. \text{cool}(x) = d$ ; see fn. 9 for a more standard, intuitive equivalent)

- (11)
- pos** =  $\lambda g \in D_{\langle e, d \rangle} \lambda t \lambda x. g(x)(t) \geq \text{stnd}(g)$
  - pos(wide)** =  $\lambda t \lambda x. \text{wide}(x)(t) \geq \text{stnd}(\text{wide})$

- “[T]he adjectival core of a DA is a special kind of derived measure function that measure the degree to which an object changes long a scalar dimension as the result of a participating event” (p172).

- (12) **Difference functions:** For any measure function [=gradable adjective] **m** from objects and times to degrees on a scale *S*, and for any  $d \in S$ ,  $\mathbf{m}_d^\uparrow$  is a function just like **m** except that:

- its range is  $\{d' \in S : d \leq d'\}$ , and
- for any  $x, t$  in the domain of **m**, if  $\mathbf{m}(x)(t) \leq d$  then  $\mathbf{m}_d^\uparrow(x)(t) = d$ .

- (13) **Measure of change:** For any measure function [=gradable adjective] **m**,  
 $\mathbf{m}_\Delta = \lambda x \lambda e. \mathbf{m}_{m(x)(\text{init}(e))}^\uparrow(x)(\text{fin}(e))$

- (26) Verbal form of **pos**:  $\text{pos}_v = \lambda g \in D_{m_\Delta} \lambda x \lambda e. g(x)(e) \geq \text{stnd}(g)$

- All  $\mathbf{m}_\Delta$ s have minima... they inherit maxima from the adjective scales when/if possible

- (14) **Interpretive Economy** (Kennedy 2007): Maximize the contribution of the conventional meanings of the elements of a sentence to the computation of its truth conditions.

- So if an adjective is associated with...

- \* a lower-bound scale (*awake?*), the lower bound must serve as the standard
- \* an upper-bound scale (*straight*), either the upper or lower bound can serve as the standard
- \* a totally closed scale (*full/empty*), either the upper or lower bound can serve as the standard
- \* an open scale (*wide*), the standard comes from context (making the telic reading come from a “conventionalized but non-scale-based standard,” p178)

- see also Kennedy and McNally (2005) for a typology of relevant adjectives and their ‘scale structures’

### 3 affectedness

- what's affectedness?

1. change of state: *clean, change, fix, break*
2. directed motion (change in location): *move, push, roll*
3. contact but no change: *hit, kick, rub, scrub, sweep*
4. creation/consumption predicates: *delete, eat, reduce, build, design*

- what sorts of theta roles are we thinking about?
- a gradable notion?

- (15)
- a. John ate the apple up.
  - b. John cut the apple.
  - c. John kicked the apple.
  - d. John touched the apple.

- diagnostics, traditionally (see the many many references in Beavers (2011)):

- *wh*-clefts – although very contextually variable, and not great with creation predicates

- (16)
- a. The Romans destroyed the city.
  - b. What happened to the city is that the Romans destroyed it.

- entailment – not clear how this works for contact/impact predicates

- (17) John painted the room, #but it is not painted.

- (18)
- a. John painted the room, #but nothing is different about it.
  - b. John walked out of the room, #but he is not something else.

*for motion*

- allowing result XPs for their force recipients – not stable cross-linguistically

- (19)
- a. John painted the bedroom (a fierce red).
  - b. John pounded the metal (flat).

- (not DP-preposing, or middle formation or passivization, because it works for path objects: *The desert crosses easily for settlers*)

(23)

Diagnostics	Dynamic predicate $\phi$ entails that $x$ is a			
	patient		non-patient	
	specific result (Predicates in (2a–c,e,f))	non-specific result	force recipient (Those in (2d))	Non-force recipient (Other)
$\phi$ is telic	✓	×	×	×
Change entailed of $x$	✓	✓	×	×
$x$ takes result XP	✓	✓	✓/×	×
<i>Happened/did to x</i>	✓	✓	✓	×
$\phi$ is dynamic	✓	✓	✓	✓/×
Result XP variation	Low	Low/High	High	N/A

“[D]espite the fact that the tests do not all line up, they have a crucial property that I do not believe has been discussed before: setting aside a few orthogonal factors... the tests group types of dynamic predicates into **subset relations** regarding change, where a subset of dynamic predicates take force recipients, a subset of these entail change, and a subset of these are telic.” (Beavers, 2011, 245)

- a new notion: generalizing telicity (see also Tenny, 1994)

- diagnostics for telicity:

- \* *in/for* adverbials: impacted by both patient type and path type, cf. (22)

- (20) a. Sandy ate the peach *in /?for* an hour.  
 b. Sandy ate peaches *for /?in* an hour.
- (21) a. John crossed the desert *in /?for* ten days.  
 b. John crossed deserts *for /?in* ten days.
- (22) a. John avoided (the) reunion(s) *for /?in* an hour.  
 b. John wandered (the) deser(s) *for /?in* three days.

- \* synonymy in measuring out

- (23) a. Sandy ate half the peach.  $\leftrightarrow$  Sandy at a peach halfway.  
 b. John crossed half of the desert.  $\leftrightarrow$  John crossed the desert halfway.  
 c. John avoided half of the reunion.  $\leftrightarrow$  #John avoided the reunion halfway.
- (24) a. Bill dimmed half of the lights.  $\leftrightarrow$  Bill dimmed the lights halfway.  
 b. Bill dimmed the lights half dim.  $\leftrightarrow$  Bill dimmed the lights halfway.

- the analysis

- scales are triples  $\langle S, R, \delta \rangle$ , with  $\delta$  a dimension;  $S$  a set of degrees along  $\delta$ ; and  $R$  an ordering
- *-en* and similar morphemes encode an operator INCREASE

- (25) INCREASE( $P(x)$ )( $d$ )( $e$ ) is true iff  $x$  has  $P$  to some degree  $d'$  at the beginning of  $e$  and degree  $d' + d$  at the end.

- Hay/Kennedy/Levin approach plus Krifka's mereology: the "Krifka-based scalar model":

- (26) a.  $U_P$  = the set of objects  
 b.  $U_E$  = the set of events  
 c.  $U_H$  = the set of directed paths / scales

- \* in each domain, a mereology:<sup>1</sup>

- (27) a.  $x'$  may be a subpart of  $x$  ( $x' <_X x$ ) or a subpart or equal to  $x$  ( $x' \leq_X x$ ).  
 b.  $x \oplus_X x'$  is the sum (or join) of  $x$  and  $x'$ .  
 c.  $x$  is atomic iff for all  $x' \leq_X x$ ,  $x' = x$ .

- \* theta roles:

- SOURCE( $s, b, e$ ):  $x$  is at state  $b$  on  $s$  at the beginning of  $e$
    - GOAL( $s, g, e$ ):  $x$  is at state  $g$  on  $s$  at the end of  $e$
    - a result operator ("This says that for event  $e$  described by  $\phi$ ,  $g <_H s$  is the target state of theme  $x$  on scale  $s$  iff  $x$  transitions to  $g$  by the end of  $e$  from a contextually determined state  $b_c <_H s$  at the beginning of  $e$ ", p351)

- (28) For all dynamic predicates  $\phi$ , themes  $x$ , events  $e$ , states  $g$ , and scales  $s$ :  
 $[[\phi(x, s, e) \wedge \text{result}(x, s, g, e)] \leftrightarrow [\phi(x, s, e) \wedge \text{SOURCE}(s, b_c, e) \wedge \text{GOAL}(s, g, e)]]$

- \* "What differentiates motion, change-of-state, and creation consumption is not their underlying event structure, but rather the *type* of scale selected by the predicate: a location scale (i.e. a path), a property scale, or an extent scale respectively".

- (29) a. John walked to the cafe. *scale of John's position*  
 $\exists e \exists s [\text{walk}(\text{john}, s, e) \wedge \text{result}(\text{john}, s, \text{cafe}, e)]$

<sup>1</sup>Degrees are atomic subparts of scales, and one scale is a non-atomic subpart of another; the  $U_H$  domain additionally involves the precedence relation.

- b. John wiped the table clean. scale of the table's cleanliness  
 $\exists e \exists s [\text{wipe}(\text{john}, s, \text{table}, e) \wedge \text{result}(\text{table}, s, \text{clean}, e)]$
- c. John ate the apple. scale of the apple's volume  
 $\exists e \exists s [\text{eat}(\text{john}, s, \text{apple}, e) \wedge \text{result}(\text{apple}, s, 0, e)]$

- the original typology, formalized:

- (60) a.  $x$  undergoes a **quantized** change iff  $\phi \rightarrow \exists e \exists s [\text{result}'(x, s, g_\phi, e)]$   
 (e.g. accomplishments/achievements: *break, shatter, destroy, devour x*)
- b.  $x$  undergoes a **non-quantized** change iff  $\phi \rightarrow \exists e \exists s \exists g [\text{result}'(x, s, g, e)]$   
 (e.g. degree achievements/cutting: *widen, cool, lengthen, cut, slice x*)
- c.  $x$  has **potential** for change iff  $\phi \rightarrow \exists e \exists s \exists \theta [\theta(x, s, e)]$   
 (e.g. surface contact/impact: *wipe, scrub, rub, punch, hit, kick, slap x*)
- d.  $x$  is **unspecified** for change iff  $\phi \rightarrow \exists e \exists \theta' [\theta'(x, e)]$   
 (e.g. other activities/states: *see, laugh at, smell, follow, ponder, ogle x*)

- the Affectedness Hierarchy:  
 quantized  $\rightarrow$  non-quantized  $\rightarrow$  potential  $\rightarrow$  unspecified

## references

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